

[INCH-POUND]

MIL-C-17/186B
20 February 1991
SUPERSEDING
MIL-C-17/186A(EC)
10 August 1987

MILITARY SPECIFICATION SHEET

CABLE, RADIO FREQUENCY, FLEXIBLE, TWIN,
78 OHMS, M17/186-00001

This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist
of this specification sheet and the issue of the following specification
listed in that issue of the Department of Defense Index of Specifications
and Standards (DODISS) specified in the solicitation: MIL-C-17.

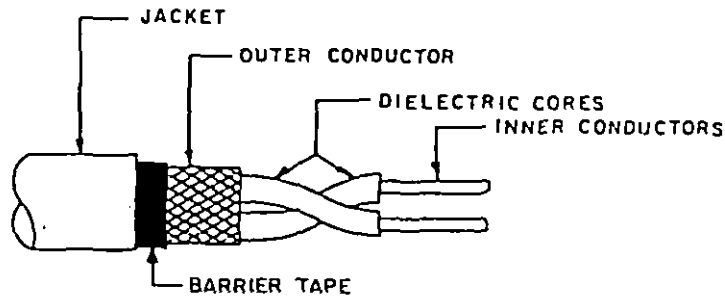


FIGURE 1. Configuration.

TABLE 1. Description.

| Components | Construction details |
|------------------|--|
| Inner conductors | Two conductors. Seven strands of tinned copper wire, each strand .0126 inch diameter. One strand of one conductor shall be bare copper for identification. Overall diameter of each conductor: .0378 inch \pm .0020. |
| Dielectric cores | Two cores, twisted together with a right-hand lay of $2\frac{1}{2} \pm \frac{1}{2}$ inches. Type A-1: Solid polyethylene, each core. Fill-to-round not applicable. Diameter of each core: .079 inch \pm .003. |
| Outer conductor | Single braid of AWG No. 36, tinned copper wire. Diameter: .180 inch nominal. Coverage: 86.8% nominal Carriers: 16 Ends: 6 Picks/inch: 10.8 \pm 10% |

TABLE 1. Description - Continued.

| Components | Construction details |
|--------------|---|
| Barrier tape | A .001 inch thick polyester tape faced with a .002 inch thick layer of aluminum. The tape will be applied with a 50% lap, aluminum face toward the outer conductor. Diameter: .190 inch maximum. |
| Jacket | Cross-linked polyolefin Diameter of major axis: .235 inch \pm .010. Jacket thickness: .018 inch minimum. |

ENGINEERING INFORMATION:

Continuous working voltage: 750 V rms, maximum.

Operating frequency: 10 MHz, maximum.

Velocity of propagation: 65.9 percent, nominal.

Operating temperature range: -30°C to +80°C.

Inner conductor properties:

DC resistance (maximum at +20°C): 1.055 ohms per 100 feet (each conductor).

Elongation: 15 percent, minimum.

Engineering notes: This cable is useful in balance cables applications. These cables were redesigned to meet the vertical flame test.

REQUIREMENTS:

Dimensions, configuration, and descriptions: See figure 1 and table 1.

Environmental and mechanical:

Visual and mechanical examination: Applicable.

Out-of-roundness: Not applicable.

Eccentricity: 10 percent, maximum. 1/

Adhesion of conductors:

Inner conductor to core: 2 pounds, minimum; 20 pounds, maximum.

1/ (T_{MAX} - T_{MIN}) shall be interpreted as the difference in total wall thickness measured (1) along a line through the centers of the conductors between the edge of each conductor and the nearest surface of the core and (2) between a line tangent to the two conductors and a parallel line tangent to the surface of the core on both sides of the conductors. The eccentricity corresponding to the larger measured value (T_{MAX} - T_{MIN}) shall be reported.

Aging stability: $+98^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

Cold bend: $-30^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

Dimensional stability: $+85^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

Inner conductor from core: .062 inch, maximum.

Inner conductor from jacket: .125 inch, maximum.

Contamination: Not applicable.

Flame propagation: Applicable.

Acid gas generation: 2.0 percent, maximum.

Halogen content: 0.2 percent, maximum.

Immersion test:

Tensile strength, percent of unaged minimum: 50

Elongation, percent of unaged minimum: 50

Smoke index: 25 maximum.

Toxicity index: 5 maximum.

Durometer hardness: (Type A) 80 minimum.

Weathering: Applicable.

Abrasion resistance: 75 cycles minimum (jacket only).

Tear strength: 35 pounds per inch minimum.

Heat distortion: 30 percent maximum distortion.

Physical tests on unaged jacket:

Tensile strength: 1,300 psi, minimum.

Elongation, 160 percent, minimum.

Physical tests on aged jacket:

Air oven:

Tensile strength, percent minimum: 60

Elongation, percent minimum: 60

Hot oil immersion:

Tensile strength, percent minimum: 50

Elongation, percent minimum: 50

Tensile strength and elongation: 1,300 psi, 160 percent minimum.

Weight: 4.1 pounds per 100 feet maximum.

Electrical:

Spark test: 2,000 V rms, minimum.
 Voltage withstanding: 2,000 V rms, minimum.
 Corona extinction voltage: Not applicable.
 Characteristic impedance: 78 ± 7 ohms. 2/
 Attenuation: 2.8 dB per 100 feet maximum, at 10 MHz.
 Structural return loss: Not applicable.
 Capacitance: 24.5 pF per foot, maximum.
 Capacitance unbalance: 5 percent maximum.

Part or Identifying Number (PIN): M17/186-00001.

NOTE: Revision letters are not used to denote changes due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:
 Army - CR
 Navy - EC
 Air Force - 85

Preparing activity:
 Navy - EC

Review activities:
 Army - AR, MI
 Navy - SH
 Air Force - 11, 80, 99
 DLA - ES, IS

Agent:
 DLA - ES
 (Project 6145-1176-07)

User activities:
 Army - AT, ME
 Navy - AS, MC, OS
 Air Force - 19

2/ Measure inductance of a 10-foot ± 2 inch test cable at 1 MHz using a suitable test instrument. The shield shall be floated and the conductors shall be shorted at the far end. Calculate the impedance (Z) from the measured inductance (L) and the measured capacitance (C) using the formula:

$$Z = \sqrt{\frac{L}{C}} \text{ ohms}$$